The Bulletin

of the

American Association of Nurse Anesthetists

MAY
1943

VOLUME XI NUMBER 2

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The ether jar should be emptied and the wick left out to dry at the end of the day. Moisture from the chemical action of the soda lime and the respiration collects in the jar and wets the wick. It doesn't work as well when wet. Ether shouldn't stand in the jar over night. The anesthetist might forget to turn off the oxygen, which might leave an explosive mixture in the unit.

The breathing tubes, bag, and face hoods should be washed with soap and water and stored in a dark, cool place — unfolded. Soap is death to the soda lime particles that collect inside the rubber and to the grease from the patient's face that gets on the hood.

The equipment apparatus thrives better in a darkened, cool room. A regular bath with soap and water won't hurt it. A drop of oil on each caster occasionally will make it pull more easily.

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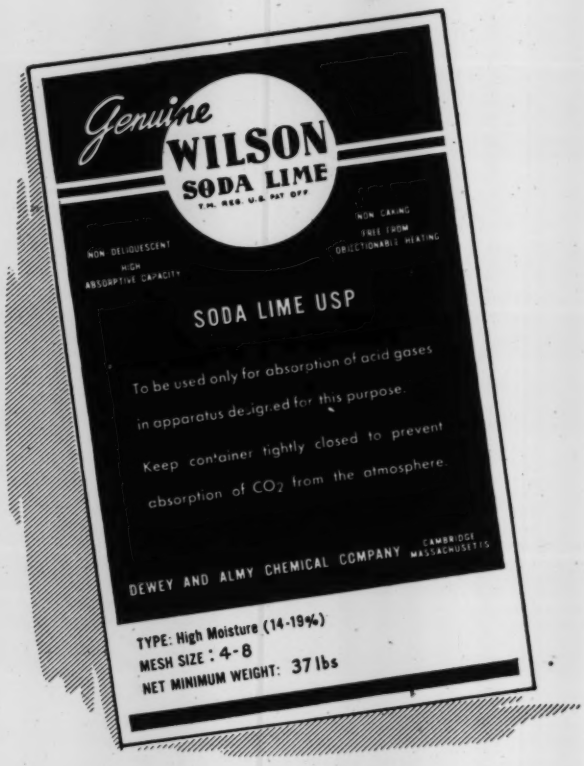

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BULLETIN OF THE AMERICAN ASSOCIATION OF NURSE ANESTHETISTS

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Illustrations accompanying manuscripts should be numbered, provided with suitable legends, and marked on margin or back with the author's name. Authors should indicate on the manuscript the approximate position of text figures.

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The Bulletin of the American Association of Nurse Anesthetists

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DEPARTMENT OF EDUCATION

SIGNS OF ANESTHESIA

(concluded from February, 1943, issue)

JANET McMAHON

University Hospitals of Cleveland, Ohio

As stated in the February issue, most of the material in the notes presented has been compiled from the following authorities:

"Inhalation Anesthesia: a Fundamental Guide"
by Arthur E. Guedel
"The Physiology of Anesthesia"
by Henry K. Beecher
"Pharmacology of Anesthetic Drugs"
by John Adriani
"Physiology in Health and Disease"
by Carl J. Wiggers
"Physiology and Anatomy"
by Esther M. Greisheimer

The material on shock was compiled from paper entitled "Shock," by Harold D. Green, M.D., published in *Anesthesiology*, November, 1942, pages 611-629.

Eye Signs

Lid Reflexes

Lid reflex is tested by gently raising the upper eyelid with the finger. If the reflex is present, the eyelid will attempt to close immediately or after a brief exposure.

Present in stages I and II; absent in stage III, plane 1.

Other Lid Reflexes

These signs *not used* because of possible injury to eye

1. Conjunctiva—palpebral; eyelid closes when tip of finger touches the margin of the upper lid when separating the lids.
2. Parson's Sign; lower lid retracts toward inner canthus when rim of upper lid is pressed directly over cornea.
3. Corneal reflex; upper eyelid snaps shut when fingertip is pressed lightly on cornea. Degree of response indicates depth of anesthesia.

Orbital Signs:

Eyeball activity: During the 2nd stage and during the 1st plane of the 3rd stage the motor muscles of the eyeball undergo a period of excitation activity. There are various types of activity: the oscillating, fixed eccentrically, and delayed oscillating which appears fixed but will be seen to move slowly if lid is held open a moment. The *degree* of eyeball activity is the important sign. Premedication may depress movements. The protruding eyeball is not so active. Activity is greatest during stage II as it approaches stage III; it becomes depressed as the 1st plane progresses, and ceases as the 2nd plane is entered.

Cessation of eyeball movement marks beginning of plane 2.

Pupillary reactions:

Changes in the size of the pupils are accompanied by the balanced action of a ring of circular non-striated muscles and a series of radial muscle fibers. Ciliary muscle and circular pupillary muscle are ennervated by the 3rd cranial nerve (oculomotor)—parasympathetic system. Radial dilators are ennervated by cervical sympathetic fibers which join the ophthalmic branch of the 5th nerve—sympathetic system.

Light reflex:

Light reflex consists of contraction of the iris when the eye is suddenly illuminated. The fiber tracts involved are the retina, optic nerve and tract, pretectal region, oculomotor nucleus, oculomotor nerve, ciliary ganglion, short ciliary nerves. The light reflex is abolished when paralytic dilatation begins.

Constriction

Constriction of the pupil occurs when the sympathetic endings are depressed, or when the parasympathetic system is stimulated. Constriction occurring in plane 1, stage III is thought to be due to depression of the sympathetic, leaving the parasympathetic free to constrict.

Dilatation

Dilatation of pupils: There are two types of dilatation—reflex and paralytic.

Reflex dilatation

Due to stimulation of the sympathetic nerves.

It occurs in stages I and II due to sympathetic stimulation from fear and excitement. If morphine has been given, this dilatation may not be so marked.

It occurs in stage III, plane 1, as a reflex response to painful stimulation.

Paralytic dilatation

No light reflex present with paralytic dilatation.

Causes of paralytic dilatation:

1. Deep anesthesia. Dilatation begins in mid 2nd plane if no premedication has been given. When morphine has been given, dilatation does not occur until lower 2nd plane.
   It has not been clearly demonstrated whether dilatation in deep anesthesia is due to anoxia or to the effect of the anesthetic agent on the iris muscle, but it is thought that both are factors.
2. Anoxia
3. Paralysis of parasympathetic endings by drugs such as atropine, scopolamine or homatropine.

Lacrimation:

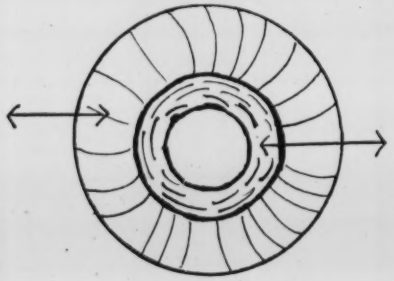
Increased with onset of 2nd stage

Abolished about mid 2nd plane. The eyeball has a dry, lusterless appearance in the deeper planes of anesthesia.

Lacrimation is retarded by morphine, atropine and scopolamine.

References: Wiggers, Physiology in Health and Disease
Guedel, Inhalation Anesthesia
Beecher, Physiology of Anesthesia

PUPILLARY CHANGES DURING ANESTHESIA



Radial dilator muscles
Sympathetic
Cervical sympathetic fibers which join ophthalmic branch of fifth nerve

Stimulation=Dilatation

Emotions and fear—excitement → Stages I and II

Surgical reflex Stimulation — stage III, plane I — Moving eyeball, active, light reflex

Paralysis=Constriction

Morphine — present before anesthesia and may continue to lower plane 2 or plane 3

Anesthetic Agent → stage III—plane 1 and upper plane 2

Circular Muscle
Parasympathetic
Third Cranial—Oculomotor

Normal action and
Stimulation=Constriction → Plane I

Paralysis=dilatation paralytic type
No light reflex

Deep Anesthesia overdose of agent — Mid 2nd plane without premedication, Lower 2nd plane with premedication — Eyeball centrally fixed

Obstruction
Anoxia — may occur in any stage — Eyeball fixed may be downward or looking up

Drugs
Atropine
Scopolamine
Homatropine — present before anesthesia, may persist throughout — Eyeball movement depends on depth of anesthesia

Muscular Relaxation and Surgical Reflexes

Relaxation occurs when there is a temporary loss of muscle tone due to inhibition of stimuli by the anesthetic agent. Tone diminishes as the centers in the central nervous system are depressed. Muscle tone depends to a considerable degree on impulses from sense organs in the muscles. When a reflex can no longer be elicited, the peripheral motor mechanism may still be active, and stimulation of the motor nerve will cause contraction.

There is little or no pain connected with surgical trauma to bone, brain or glandular tissue. However, there is pain and some reflex response to traction on their fibrous coverings and ligamentous attachments.

With the exception of those arising from the abdominal viscera, all reflexes, including those caused by traction, should be controlled by lower 1st plane anesthesia.

Skeletal muscle

Reflex contraction of skeletal muscle is in proportion to the size of the muscle, the amount of traction, and the suddenness with which that stimulus is applied. Gradual stretching produces little response. Continued stretching over a period of time will produce a temporary paralysis of the muscle, rendering it incapable of reflex response for a short period after stretching has ceased. For example, a self-retaining retractor will do this, so that the peritoneum can be closed easily without deepening the anesthesia, provided that the closure is done quickly.

Traction Reflexes

These reflexes are observed in abdominal surgery and occur when traction is made on the mesentery, uterine attachments, gallbladder, peritoneum or any abdominal viscus. The response to simulation of these reflexes is evidenced by: (1) contraction of muscles of abdominal wall with expulsion of intestines, (2) stimulation of respiration, (3) adduction of vocal cords. These reflexes are not entirely abolished even in 3rd plane anesthesia, but muscle response is abolished in the lower 2nd plane.

Subdiaphragmatic reflex:

Occurs in upper abdominal surgery, but may occur in any intraperitoneal surgery in the presence of fulminating peritonitis. The response consists of adduction of the vocal cords on *expiration*, producing a grunt. If the anesthesia is not deep enough, the expiratory contraction of the abdominal muscles against the closed glottis is very annoying to the surgeon.

This reflex is active well into 3rd plane. Lower 2nd plane anesthesia should be maintained because the increased diaphragmatic activity of 3rd plane anesthesia will add to the difficulties.

Smooth muscle tone:

In lower 3rd plane anesthesia intestinal peristalsis ceases and the smooth muscle coats of the arterial walls lose their tone. Anesthetic shock develops rapidly. Fifteen minutes of 3rd plane anesthesia will produce more circulatory depression than two hours of 1st plane anesthesia.

Muscle Signs:

Eyelid reflex: The tone of the upper eyelid is good in stages I and II and the lid will snap closed when opened with the finger. As anesthesia progresses, it becomes sluggish and will be relaxed in plane I.

Jaw sign: The degree of relaxation of the jaw is tested by pushing the jaw forward and up from the angle. In the lighter planes there will be a marked change in respiration due to the stimulation. In mid 2nd plane the response will not be marked. If the jaw is relaxed and pushing up from the angle produces no change in respiration, the plane of anesthesia is sufficient for abdominal surgery.

Diaphragmatic signs: Normally the descent of the diaphragm causes the abdominal wall to rise; when the diaphragm relaxes, the abdominal wall sinks on inspiration. The character of abdominal respiration indicates the tone of the diaphragm (Flagg, Art of Anesthesia).

Order of Muscular Relaxation:

Eyelid ..... plane 1
Tongue ..... plane 1
Jaw ..... plane 1, complete in plane 2
Skeletal muscles:
small muscles ..... plane 1
large muscles ..... plane 2
Abdominal muscles .... plane 2 (mid)
Diaphragm ..... plane 4

(Reference: Guedel, Inhalation Anesthesia)

Causes of Rigidity:

Excitement (stage II):

Excessive stimuli being sent out from higher centers cause muscular contraction.

Obstruction to airway:

A free, unobstructed airway is absolutely necessary for good relaxation. Oxygen lack and accumulating carbon dioxide cause rigidity by stimulating the nerve centers.

Reflex stimulation:

When the stimulation is too great for the plane of anesthesia, localized, or general rigidity may occur. The operation must not be started before reflexes are abolished.

Dilatation of rectal sphincter will be stimulating in any plane.

Abdominal distention:

Relaxation is difficult to achieve in presence of abdominal distension. Low Fowler's position may be an aid in closure. Local infiltration of the peritoneum is safer than the attempt to deepen the plane of anesthesia, since such patients are often poor risk cases.

Faulty positions:

A poor position will interfere with relaxation because of the strained muscles and because of interference with respiration which may result ultimately in anoxia.

Anesthetic agent:

Certain agents do not produce good muscular relaxation. Ether is used as the standard by which other agents are judged.

Circulation during Anesthesia

Pulse and blood pressure indicate operative condition of patient. The pulse is a guide for ascertaining the character of the heart action.

Locations where pulse may be felt:

Superficial temporal branch of external carotid	Immediately in front of ear at level of the eye.
Facial artery	Where it passes over jaw bone, on a line with the corners of the mouth.
Common carotid artery	Along anterior border of sternocleido-mastoid muscle at level of lower margin of thyroid cartilage.
Brachial artery	Along inner side of biceps muscle, and inner side of elbow.

Points to note in feeling a pulse:

1. Frequency, or rate
2. Rhythm
3. Force, volume (strength)
4. Tension—or resistance offered by the artery to pressure of finger.

Average pulse rates:

At birth	140
3 years	100
Adolescent	90
Adult	75
Men	60-70
Women	65-80
Old age	70

Idiosyncrasies are frequently met with.

As a rule, the rapidity of the heart's action is in inverse ratio to its force.

When reporting a pulse, always describe character of the volume as well as rate and rhythm.

Report any abnormality.

Normal pulse variations during anesthesia:

Rate increased in stage I and II due to excitement.

Rate should return to normal (or slightly above) when 3rd stage is established.

During 3rd stage (plane I and upper 2nd plane) rate may be increased by surgical stimulation. Volume remains unchanged.

Abnormal pulse variations during anesthesia:

Rate increased by anoxia, then becomes slow and bounding.

Increased rate with weak volume indicates hemorrhage or shock.

Rate slowed—by anesthetic agent, such as cyclopropane
by increased intracranial pressure
by heart block.

Irregularities:

Arrhythmias frequently occur with cyclopropane.

Auricular fibrillation; the myocardial fibers of atria contract in haphazard, disorderly fashion, resulting in gross irregularity; both rhythm

and volume irregular. May be associated with narrowing of pulse pressure and irregularity of arterial pressure. Occurs in older patients and in hyperthyroidism.

Blood Pressure:

Circulatory system consists of the pulmonary and systemic circuits.

Systemic circuit consists of:

1. The heart—operates as a pump, maintaining circulation of the blood.
2. The aorta and large arteries—distribute the blood; serve as storage and pressure equalizing chambers.
3. The arterioles—control amount of blood delivered to the capillaries.
4. The capillaries—which provide for the exchange of substances between blood and tissues.
5. The veins—which collect the blood from the capillaries and return it to the heart.

The heart builds up pressure within the aorta and large arteries by pumping blood into them and thus stretching their walls. This pressure drives the blood through the arterioles, capillaries and back to the heart. In overcoming the resistance to flow offered by these structures, the pressure is progressively reduced.

The volume of blood in the aorta and large arteries in increased with each systole of the heart, and decreases during diastole. The systolic pressure is the maximum pressure reached during contraction of the heart.

The diastolic pressure is the minimum pressure during the relaxation of the heart (indicates character of peripheral resistance).

Pulse pressure:

The difference between the systolic and diastolic pressures.

The pulse pressure is an index of the stroke volume of the heart, since the degree of stretch of the aorta with each systole is dependent upon the amount ejected by the heart.

According to Moot's Rule, the pulse pressure should be within 25 per cent to 75 per cent of the diastolic pressure.

Mean arterial pressure:

Indicates the average force with which the blood is driven to all parts of the body.

Physical factors affecting aortic pressure:

1. Cardiac stroke volume—the amount of blood pumped out by the heart per beat.
   (cardiac output—the amount of blood pumped out by the heart per minute).
   Stroke volume influenced by
   (a) Contractile power of the heart muscle
   (b) Amount of venous return.
   This determines the extent to which the heart fills during diastole, and this conditions the effort which the heart will expend in contracting.
   Increased venous return results in increased stroke volume.
2. *Heart rate*
   If heart rate and venous return are increased equally so that the

stroke volume remains constant, no increase in pulse pressure will occur. However, total amount of blood entering aorta would increase, which would result in a gradual increase in mean arterial pressure. With marked increase in heart rate, there might be a decrease in pulse pressure, because speeding of the heart and shortening of diastole would result in greater systolic outflow from the aorta.

In shock and similar conditions the heart rate may be increased reflexly more than the venous return; as a result, the stroke volume will be decreased (although minute volume increases), resulting in decreased pulse pressure.

3. *Peripheral resistance*

If the arterioles controlling the flow of blood into the capillaries dilate, or if arterioles previously closed, open up, blood will flow more rapidly out of the aorta. If the cardiac output does not change, the mean pressure declines. Constriction of arterioles results in elevation of mean arterial pressure.

4. *Aortic elasticity*

The normal aorta exerts the same amount of elastic recoil for a given amount of blood added, regardless of the existing mean pressure.

In hypertension, arteriosclerosis, and increasing age the aorta tends to become more rigid; as a result, even with normal cardiac stroke volume the arterial pressure rises higher during the systolic ejection, and declines lower during diastole.

Physiological mechanisms for maintaining constant blood pressure:

Reflex mechanisms prevent or minimize changes in arterial pressure and the accompanying changes of blood supply to the vital organs. The sensory endings of these reflexes are located mainly in the walls of the aortic arch, and in the walls of the carotid arteries at their bifurcations. These endings are stimulated by any deviation from normal pressure and transmit impulses to the vasomotor centers in the medulla, which starts the mechanism for restoring blood pressure either by slowing the heart rate and by vasodilation, or by increasing the heart rate and vasoconstriction. Normally both of these pathways are constantly active.

Reference: Harold D. Green, M.D.

Arterial Blood Pressure

Bulletin of the American Association of Nurse Anesthetists, May, 1941.

Normal variations in blood pressure

Elevated before anesthesia, due to excitement and nervousness
Depressed before anesthesia, due to premedication
Elevated during stages 1 and 2—excitement and struggling
Returns to normal level—stage III, plane 1.
Begins to fall—stage III, plane 3
Reaches shock level—stage IV.

Abnormal variations in blood pressure

Lowered by: Premedication and basal anesthesia such as avertin
Anesthetic agents, such as evipal, pentothal and spinal.

Stimulation of certain reflexes
Traction on splanchnic viscera
Sudden changes in position
Hemmorrhage
Shock

Elevated by: Increased carbon dioxide tension
Asphyxia
Surgical stimulation.

Circulatory accidents under anesthesia

1. Accidents due to increased blood pressure
   Rupture of a blood vessel—cerebral hemorrhage
   Acute cardiac dilatation

Prevention of increased blood pressure important
Avoid asphyxia by maintaining proper carbon dioxide-oxygen balance.
Inhibit adrenin output by reducing emotional disturbances.

2. Ventricular fibrillation
   A disorderly, useless contraction of the ventricles. No blood is expelled into the aorta. Blood pressure falls abruptly to zero.
   Induction of anesthesia provides favorable circumstances for production of ventricular fibrillation. Emotional excitement produces increased activity of sympathetic nervous system and increased output of adrenin.
   Any added stimulus, such as the delirium of 2nd stage or physical stimulation during induction, may produce fibrillation.

Prevention: 1. Premedication: to prevent depression of sympathetic hyperactivity. Morphine does not accomplish this. The barbiturates effectively depress sympathetic system (Guedel).
Atropine, scopolamine are used to depress vagal reflexes.
2. Avoid any external stimulation during stage II.
3. Smooth, rapid induction.
4. Avoid use of epinephrine in general anesthesia if possible.

Treatment: Artificial respiration with oxygen
Cardiac massage and electric shock
(Wiggers has reported success in reviving 85 per cent of fibrillating dog hearts by this method).

It has been demonstrated experimentally and clinically[1] that myocardial irritability is decreased by local application[2] and by intravenous injection of procaine hydrochloride.[3]

Shen and Simon[4] have shown experimentally that procaine added to adrenalin will counteract the tendency of adrenalin to produce ventricular fibrillation. The amount of procaine found necessary to protect against

fibrillation was 4.0 mg. to 5.0 mg. per kilogram. This is much below the fatal dose of 40 mg. per kilogram (Meyer and Gottlieb). It seems reasonable that there might be some clinical application but as yet there have been no reports of its use.

Hemorrhage:

Early symptoms: Increased pulse rate, narrowing pulse pressure. If hemorrhage continues, shock-like state develops.

Treatment: Restore blood volume by intravenous fluids—saline, glucose, whole blood.
Maintain high oxygen tension atmosphere.

Shock:

Clinical picture of shock: Shock has been defined as a state of peripheral circulatory failure characterized by low arterial blood pressure, narrow pulse pressure, rapid, weak pulse, and shallow respiration. The skin is cold and perspiring; color pale, or ashen grey. There is marked depression of all body functions — under anesthesia reflex response to stimulation will be depressed.
A valuable sign of the state of peripheral circulation is the reflushing of the skin after blanching from pressure. Quick reflushing indicates a good peripheral circulation.

Summary of phenomena observed during shock:[5]

Shock may be divided into an initial, or prodromal stage and the stage of severe hypotension and progressive deterioration which is called true shock.[5]
Certain factors operate to produce a persistent decrease of cardiac output. This is due to the production of a discrepancy between the blood volume and the vascular capacity. This sets up a course of events, one factor producing another with each factor accentuating the preceding ones. Thus "shock represents a progressive, self-perpetuating deterioration of the circulation."

Sequence of events:

Initial stage: Discrepancy between blood volume and vascular capacity—decreased venous return—reduced cardiac output — decrease in arterial pressure—diminished volume of circulation to all parts of body.

Compensatory mechanisms:

1. Reduction of volume of blood reservoirs—spleen and possibly liver.
2. Vasoconstriction in less essential parts of body
3. Increased heart rate.

Progressive stage: Begins when compensatory mechanisms fail to maintain blood pressure and when the diminished volume of circulation throughout the body begins to appear.
Diminished circulation—increased permeability and dilatation of capillaries—fluids and proteins of plasma lost into extra vascular tissues and red cells accumulate in dilated capillaries — de-

				Eyeball Move nent	Light Reflex	Corneal	Vomiting	Pharyngeal
	C.N.S. Depression	Respirations	Pupils					
Stage I Analgesia	Cortex. Higher Activities.	Normal or Affected by Factors 2-3-4-5-6. Volume Increases as Co_2 Increases.	Constricted with Morphine. Dilated from Fear.	Normal	+	+	+	+
Stage II Delirium	Cortex, Motor, Sensory Areas; Inhibitory Centers.	No Guide; Irregular.	Dilated with Active Light Reflex.	++++	+	+	+	+
Stage III—Surgical Anesthesia Plane 1	Cortex, Motor Areas; Occipital, Frontal Lobe; Cortico-thalamic Fibers; Mid-brain, Cord.	Rhythmic, Full Volume; Active Reflex Response to Stimulation.	Constricted. Reflex Dilatation. Active Light Reflex.	++++ +++ +	+ + +	+ + +	+ — —	+ — —
Plane 2		Volume Decreased. Rate Increased. Reflex Response to Stimulation Depressed.	Constricted. Paralytic Dilatation Begins; No Light Reflex.	—	+ — or —	+ — or —		
Plane 3	Medullary Centers Depressed.	Intercostal Paralysis; Inspiration Short, Jerky; Volume Shallow.	Moderate Dilatation.					
Plane 4	Increasing Medullary Depression.	Gasping, Jerky Inspiration; Shallow Volume.	Marked Dilatation.					
Stage IV	Medullary Paralysis.	None.	Marked Dilatation.					

*Muscle response abolished.

Cough	Laryngeal	Skin	Nerve Trunk Traction	Deep Traction	Relaxation	Pulse	Blood Pressure	Operations
+	+	+	+	+	None.	Normal or Increased Due to Excitement.	Normal or Elevated.	First Stage Labor. Dental Cases. Short Minor Procedures.
+	+	+	+	+	None. Rigidity Present.	Increased.	Elevated Due to Excitement and CO_2.	None.
+	+	—	+	+ + +	+	Returns to Normal or Slightly Increased From Stimulation.	Returns to Normal or Slightly Above.	Minor Procedures, D & C. Thyroidectomy. Thorocoplasty. Mastectomy; Brain Surgery. Mastoidectomy. Fractures—Small Bones.
—	+ —			+ —*	++ +++	Increases Due to Intensive Stimulation or Shock.	Begins to Fall.	Tonsils—Adenoids. Hernia. Abdominal Surgery. Fractures of large bones.
					++++ Loss of Smooth Muscle Tone in Mid Plane.	Rate Increased.	Falling.	Gall Bladder—Ventral. Hernia Occasionally. Podalic Version; Bandl's Ring. Breech Extraction.
						Rapid and Weak.	Falling.	
						Rapid and Weak.	Shock Level.	

pression of functions and metabolism of tissues—accentuation of already existing discrepancy between blood volume and vascular capacity.

Factors initiating shock:

Burns
Hemorrhage
Intestinal obstruction
Trauma
Coronary occlusion
Anesthetics
Toxins and other chemical agents.

Treatment:

Prevention important. Blood volume must be restored before progressive stage is established and irreversible damage has been done to body tissues.

1. Intravenous fluids—saline, glucose, whole blood, plasma. Whole blood and plasma preferred—choice depends upon cause of shock.
2. Administration of oxygen in high concentrations.
3. Maintain light level of anesthesia.
4. Keep patient warm, but avoid excessive external heat, since it may cause dilatation of vessels of extremities with resulting reduction of blood flow to heart and brain.[6]
5. Elevate foot of bed. It is thought that gravity will aid in increasing blood flow to brain and will benefit venous return to heart.[6]
6. Vasoconstrictor drugs. The use of these drugs is recommended only to combat the effects of vasodilator drugs such as spinal anesthesia. When vasoconstriction is present, the ill effects of the use of such drugs may be greater than the benefit that is derived.[6]

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PARTIAL PRESSURE OF GASES

HELEN LAMB

Barnes Hospital, St. Louis

Air, like all other gases, expands in all directions. Since air has weight, it exerts a pressure upon all bodies with which it is in contact.

The amount of pressure exerted by atmospheric air upon objects existing within that atmosphere, depends upon the altitude at which those objects exist, and, therefore, the amount and weight of atmospheric air which lies above them and is, therefore, pressing upon them.

Just as the bed of the ocean sustains great pressure from the weight of the water which lies above it and rests upon it, so the surface of the earth is subject to similar pressure from the weight of the air which lies above and rests upon it from this "ocean of air" in which we live.

By means of a suitable measuring instrument called a "barometer," the weight of a column of air extending from the earth's surface at sea level, to the upper boundary of the atmosphere, can be shown to be equal in weight or pressure to a corresponding column of mercury which measures 760 millimeters in height: therefore, normal "atmospheric pressure at sea level" is said to be 760 mm. Hg.

Atmospheric pressure is sometimes stated in inches of mercury (29.92 in. Hg. at sea level). It is sometimes stated in terms of pressure per square inch of surface area (14.7 lbs. per sq. in.).

It is obvious that there is less atmospheric air above an object which is located nearer to the upper boundary of the earth's atmosphere, than there is above that object when it is located further below (deeper under) that upper boundary of the atmosphere. Therefore, at higher altitudes, the barometric pressure to which objects are subjected, is less than the pressure to which they are subjected at lower altitudes.

The following table illustrates characteristic differences in barometric pressure at different altitudes:

At sea level	barometric	pressure	= 760 mm. Hg.
At 5,000 ft. altitude	"	"	= 632 mm. Hg.
At 8,000 ft. "	"	"	= 570 mm. Hg.
At 10,000 ft. "	"	"	= 520 mm. Hg.
At 20,000 ft. "	"	"	= 350 mm. Hg.
At 40,000 ft. "	"	"	= 140 mm. Hg.
At 60,000 ft. "	"	"	= 50 mm. Hg.

When any gas, or mixture of gases, occupies a given volume of space, that gas or mixture of gases exerts an "outward" pressure exactly sufficient to offset the "inward" pressure exerted against it by the atmosphere which surrounds it. This pressure at sea level, as already stated, measures 760 millimeters of mercury.

If the gas mixtures consists of 21 per cent oxygen and 79 per cent nitrogen, the total pressure of the gas mixture measures 760 mm; but the partial pressure of the oxygen in that mixture constitutes only 21 per cent of that total pressure (21 per cent of 760 mm.. or 160.6 mm. Hg. of oxygen) while the partial pressure of the nitrogen is 79 per cent of the total pressure (79 per cent of 760 mm. = 660.4 mm. Hg. of nitrogen). From this it is seen that the partial pressure of any

of the gases in a gaseous mixture, represents that part of the total pressure that the volume of that particular gas constitutes of the total mixture of gases.

In this connection, it is important to note in anesthesia and in oxygen therapy, that it is in reality the "partial pressure" of oxygen in inspired mixtures, (not merely their "percentage" concentration) that determines their physiological oxygenation value. Extensive experiment has demonstrated the fact that the human economy is geared to an oxygen tension of approximately 160 mm. partial pressure. This oxygen tension at sea level coincides with the 21 per cent of oxygen which exists in normal air; but it is to be borne in mind that the feature that is of physiological significance, is the 160 mm. of partial pressure of oxygen contained in the atmosphere, rather than the accompanying fact that it constitutes 21 per cent of the breathed atmosphere.

In that exact connection, it is to be noted that while at sea level conventional "percentage" calculations of oxygen tension in breathed atmosphere are entirely in order, (because of the above stated fact that 21 per cent of oxygen in atmospheric air at sea level yields the 160 mm. partial pressure of oxygen (21 per cent of 760 = 160 mm.) necessary for normal physiological requirements, these percentage calculations must be superseded by partial pressure calculations when similar procedures are to be conducted at high altitudes; for as noted in table on Page 75, as altitude increases, barometric pressure decreases, until at 8,000 ft. altitude, barometric pressure registers only 570 mm. of pressure. The 21 per cent of oygen in the atmosphere at that high altitude would represent only about 120 mm. of oxygen, (21 per cent of 570 mm. = 119.7 mm.) instead of the approximately 160 mm. needed for normal physiological requirements (until such time as an individual at high altitudes becomes acclimated to the lessened oxygen content; which is accomplished by increased hemoglobin production or by other physiological readjustments).

Stating the foregoing fact differently: as the atmosphere "thins out" or "becomes rarefied" by reason of the lesser pressure or compression at which it exists at the higher altitude, a given volume of that atmospheric air contains less actual air (and therefore less oxygen) than does a similar volume of that air when it is measured at the greater pressure or compression under which it exists at sea level, even though in each case the oxygen constitutes 21 per cent of the total volume.

To convert this fact into concrete figures, and to illustrate the practical significance of partial pressure calculations in such circumstance, rather than mere percentage calculations (when activities are to be conducted at high altitudes with their lesser barometric pressures) it is to be noted that:

(a) experiment in many parts of the world has demonstrated that country air (uncontaminated by local pollution) contains the same approximate percentage of oxygen (about 21 per cent), regardless of the part of the world, and regardless of whether at sea level or at the top of high mountains.

(b) while at sea level this 21 per cent of oxygen constitutes about 160 mm. partial pressure of oxygen in the inspired mixture (21 per cent of 760 mm. = 160 mm.) the same 21 per cent of oxygen at a high altitude such as 8,000 ft. (where barometric pressure is only about 570 mm. Hg.) constitutes a partial pressure of only about 120 mm. oxygen (21 per cent of 570 mm. = 119.7 mm.).

The significance of these partial pressure calculations in the field of anesthesia, is illustrated by noting that while at sea level (New York, for instance, with a normal barometric pressure of 760 mm.) an anesthetic mixture containing 84 per cent nitrous oxide and 16 per cent oxygen presents to a patient 638 mm. of nitrous oxide and 121 mm. of oxygen, the same percentage mixture administered at a place located at an elevation of 5,200 ft. (Denver, for instance, where the barometric pressure is normally only about 628 mm.) would present to the patient only about 528 mm. Hg. of nitrous oxide and 100 mm. of oxygen (84 per cent of 628 mm. nitrous oxide = 527.5 mm; and 16 per cent of 628 mm. oxygen = 100.4 mm.) which partial pressures of these gases in the administered mixture, it will be noted, do not provide sufficient tension of either nitrous oxide for effective anesthesia, or of oxygen for satisfactory physiological oxygenation.

U. S. Department of Meteorology states the altitude of Denver as 5,292 ft. and its mean barometric pressure as 24.72 in Hg.

1 inch = 25.4001 mm.

24.72 inches x 25.4001 mm. = 627.89 mm. Hg. (Approximately 628 mm. Hg. mean barometric pressure at Denver).

NOTES FROM HEADQUARTERS

MARY ELIZABETH APPEL
Executive Secretary

Great things may be expected for the progress of the Association this year as a result of the well-organized activity of the various committees. You will be interested to know that in spite of the grave personnel shortages, the committees are devoting every spare moment to constructive plans for Association development.

Public Education Committee

As a part of this program, Miss Hazel Blanchard of Troy, New York, Chairman, has some of her committee members working on press releases and articles to go to various publications over the country, while other members are engrossed in outlining the best selection of books for a well-grounded Headquarters library on anesthesia.

Miss Blanchard's committee personnel encompasses talented members from widely distributed points of the United States. Here are their names:

Mrs. Jack K. Childress
716 West Avenue G
Temple, Texas
Miss Dean Eberhardt
Barnes Hospital
St. Louis, Missouri
Mrs. Helen Y. Walker
1824 Wallace Street
Philadelphia, Pennsylvania
Miss Dagmar A. Nelson
170 South Mountain View Ave.
Los Angeles, California
Miss Margaret F. Sullivan
Roosevelt Hospital
New York City, N. Y.

Public Relations Committee

This committee is also headed by Miss Hazel Blanchard, and its members are responsible for carrying out a program as outlined and approved at the annual convention in St. Louis, October, 1942; also to see that the recommendations made by the committee and approved at the annual convention in regard to Sectional Assemblies are carried out. Committee members are as follows:

Miss Alice M. Racette
Ellis Hospital
Schenectady, New York
Miss Rose G. Donovan
Mt. Sinai Hospital
Philadelphia, Pennsylvania
Miss Virginia M. Foley
Strong Memorial Hospital
Rochester, New York

Examination-Registration Program

A notice in regard to the progress of this committee will be found on page 94 of this issue of the Bulletin, as written by the Chairman, Miss Miriam G. Shupp, Strong Memorial Hospital, Rochester, N. Y. Serving with Miss Shupp on this committee are:

Miss Helen Lamb
Barnes Hospital
St. Louis, Missouri
Mrs. Gertrude L. Fife
University Hospitals
Cleveland, Ohio

Membership Committee

Stringent requirements in regard to the educational training and background have made membership in this Association something to be valued and appreciated. Under the direction of Miss Lucy Richards, City Hospital, Cleveland, Ohio, every application is given the most careful study, and every decision is weighed in an effort to be fair to the applicant and to the Association. With Miss Richards on this committee are:

Mrs. Myra Van Arsdale
1204 Warren Road
Lakewood, Ohio
Miss Myrn E. Momeyer
St. Luke's Hospital
Cleveland, Ohio

Educational Committee

The very core of the Association's progress lies within its broad educational program. The Chairman of this committee is Miss Helen Lamb of Barnes Hospital, St. Louis, Missouri. On Miss Lamb's committee are:

Miss Edith Helen Holmes
Norwegian-American Hospital
Chicago, Illinois
Miss Janet McMahon
University Hospitals
Cleveland, Ohio
Mrs. Sally F. Knight
Baylor University Hospital
Dallas, Texas
Miss Lillian G. Baird
University Hospital
Ann Arbor, Michigan

Curriculum Committee

Building a curriculum for the schools training the potential members of a professional oganization calls for a great deal of teaching experience and concentrated study on the part of the committee members entrusted with this important work. Much credit goes to those committee members who have given generously of their time in building the curriculum into its present form. This year's chairman is Mrs. Gertrude L. Fife, University Hospitals, Cleveland, Ohio, and her committee members are:

Miss Eletta Engum
Mount Carmel Mercy Hospital
Detroit, Michigan

Miss Alma Webb
Texarkana Hospital
Texarkana, Texas
Miss Mary Helen Snively
Duke University Hospital
Durham, North Carolina

Revisions Commitee and Trust Fund

For some years the able Captain of these two committees has been Miss Verna M. Rice of Mobile, Alabama. Revision of the by-laws is a most exacting task and the present edition is proof of the arduous labor and serious consideration given to it by Miss Rice and her committee. Due to the scarcity of personnel, this committee has not been completed for 1943.

There is a fine spirit to be found among all of our loyal State Association officers throughout the country. In addition to their own strenuous professional duties, each and every one of the officers has worked diligently to hold the states' membership together in this period of vital changes. To mention just a few:

Nebraska

In Nebraska, the State Association President, Mrs. W. S. Gulotta, is collecting interesting facts on members who have helped to make up the history of the state. This has created much interest among the members and is an added link in holding them together.

California

The California officers include a Chairman on Welfare and one of Publicity to preserve this large state's enthusiasm and ever growing membership. Much credit goes to its dynamic President, Mrs. Jean Pray of Oakland, and the recent Secretary, Mrs. Nan Snodgrass of San Francisco.

Texas

Down Texas way there's a firebrand of energy in petite Mrs. Jack Childress of Temple, who lets nothing stand in the way of a good meeting. To quote her regarding their annual get-together, "We had a much better meeting than we really expected—even a larger attendance than the last two years."

Louisiana and Georgia

Army enlistments have depleted the full quota of Board members in some of the southern states, such as Louisiana and Georgia. This means "double duty" for the remaining members, but certainly has not stopped their progress. These two states, as well as the rest in the southern area, are continuing to grow in membership and in strength.

Minnesota

The Minnesota Association raised extra money by sponsoring a book review on "Mrs. Apple Yard's Year" at their April meeting, selling tickets at 25 cents each. While all the members loyally pitched in on the ticket campaign, the State Association Secretary, Miss Hazel Peterson of Fairview Hospital, Minneapolis, led with thirty-one sales to her credit.

Pennsylvania

The State Association of Pennsylvania still leads in membership, with Illinois and New York not far behind.

So far it has been a grand year with a fine record for all the states, and the annual report at the close of 1943 will show some startling strides.

Isana Arrives!

The first edition of the fine new Bulletin of the Illinois Association has just arrived and its name is "ISANA." Miss Mabel Nichol, charter President of the Illinois Association, is editor, and her editorial assistants are Miss Nelle Vincent, Evanston Hospital, Evanston, and Miss Edith Helen Holmes, Norwegian-American Hospital, Chicago.

In spite of heavy working schedules and long hours, these energetic members have managed to come forth with inspiring commentaries on what's going on within the state, and are to be congratulated on their successful venture into the publishing field.

This makes the fourth State Association to have its own bulletin—Oregon, Iowa and Minnesota each have been publishing one for some time. Let's hope the number increases!

Library Contribution

Another instance of Illinois' pride in its own State Association, as well as in the national body, is its generous donation of $25.00 toward building a complete library on anesthesia.

Many Thanks to Michigan

It takes careful planning and hours of labor to work out a systematic index of more than 1086 cards giving the author, subject and title of anesthesia articles in current publications. This was done by Sister M. Helen Hughes and Esther Myers Stephenson of Mount Carmel Mercy Hospital, Detroit, Michigan, and donated to the Headquarters Library. This is to be used in answering the many inquiries on "where to look for what in anesthesia."

Also from Michigan is a contribution to the library of a collection of more than 500 reprints of anesthesia articles that have appeared in various medical journals and bulletins. These were donated by Esther Myers Stephenson and Elizabeth Coleman, also of Mount Carmel Mercy Hospital.

Gift of Books

Two very valuable books were given to the Headquarters library by L. H. Wright, M.D., E. R. Squibb & Sons, New York City. One is "The American Year Book of Anesthesia and Analgesia" of 1915, a first edition, and the other, "A Practical Guide to the Administration of Anesthetics" by Probyn-Williams, 1901 edition. These fine old books have been the subject of enthusiastic comment from visitors at headquarters, and the entire membership is grateful to Dr. Wright for his gracious gift.

In the Service

En route to her new assignment as an army nurse anesthetist at the Percy Jones Hospital at Battle Creek, Michigan, Miss Irene Arns dropped by to leave her copy of "The Art of Anesthesia" by Paluel J. Flagg, M.D., a 1916 edition, for use in our growing library. Many thanks and good luck to 2nd Lieutenant Arns!

New Schools for Nurse Anesthetists

Dr. Mary Karp, Director of Anesthesia for Wesley Memorial and Passavant Hospitals in Chicago, has been conducting a course in anesthesiology for nurse anesthetists for more than a year. There are six graduate nurse anesthetists on Dr. Karp's staff, all members of the American Association of Nurse Anesthetists, to assist her in her work at Wesley Memorial, and four graduates on the Passavant staff. The course of training is for a period of one year.

Recently more than one hundred members of the Illinois Association of Nurse Anesthetists were guests of Dr. Karp at the Wesley Memorial auditorium when she spoke on "Cyclopropane in Obstetrics."

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NOTICE TO MEMBERS

When you change your address, will you please cooperate with us by notifying immediately your former State Association Secretary (if you have been located in an organized state); also American Association Headquarters, 18 East Division Street, Chicago, Ill.; and the office of the Publishing Committee, 2065 Adelbert Road, Cleveland, Ohio. This will keep our records up to date and will insure prompt delivery of your Bulletins.

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NOTICE TO STATE SECRETARIES

At the annual convention in St. Louis last fall it was stated that a detailed handbook setting forth all procedures on routine matters between Headquarters and the State Associations would be furnished. Due to the fact that certain changes will be made in the work carried on between Headquarters and the State Associations, it was considered wise to postpone issuance of a manual on all organizational matters.

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STATE ACTIVITIES

OHIO

The anual meeting of the Ohio Hospital Association was held at the Neil House, Columbus, April 27-29, 1943, and the Ohio anesthetists were invited to meet with them as usual. Due to acute shortage of anesthetists in the hospitals, however, and difficulty in obtaining speakers, the Board of Trustees of the Ohio Association of Nurse Anesthetists decided to cancel the annual meeting this year.

Present officers will be carried over for another year:

PRESIDENT MILDRED SAUERS

President
Mildred Sauers
City Hospital, Cleveland

First Vice-President
Sister M. Benignus
Mercy Hospital, Hamilton

Second Vice-President
Leila P. Wise
St. Elizabeth's Hospital, Dayton

Secretary-Treasurer
Helen U. Carney
Youngstown Hospital, N. S. Unit, Youngstown

Trustees:
Emilie Kaiser
Myrn E. Momeyer

PROGRAM — ANNUAL MEETING

TRI-STATE NURSE ANESTHETISTS' ASSEMBLY OF ILLINOIS, INDIANA, MICHIGAN AND WISCONSIN

in conjunction with the Tri-State Hospital Assembly

Palmer House, Chicago

May 5-7, 1943

Wednesday, May 5

GENERAL SESSION

2:00 P. M. Call to Order

Mae B. Cameron, Chairman, Tri-State Nurse Anesthetists' Assembly of Illinois, Indiana, Michigan and Wisconsin, Ravenswood Hospital, Chicago.

Mabel E. Johnson, Sheboygan, Wis., Presiding
President, Wisconsin Association of Nurse Anesthetists

Greetings from Tri-State Hospital Assembly
Malcolm T. MacEachern, M.D., Chicago; Associate Director American College of Surgeons; Chairman, Program Committee Tri-State Hospital Assembly
Greetings from American Association of Nurse Anesthetists
Mary Elizabeth Appel, Chicago, Executive Secretary
"Anesthesia from the Viewpoint of a Surgeon"
Edmund H. Mensing, M.D., Consulting Surgeon, Veterans' Hospital, Milwaukee
"Shock in Its Relationship to Blood and Plasma Loss" (with slides)
Harry K. Ransom, M.D., Associate Professor of Surgery, University Hospital, Ann Arbor, Michigan
"The Present Status of the Nurse Anesthetist"
Myra Babcock, M.D., F.I.C.A., Chief Anesthetist Grace Hospital School of Anesthesia, Detroit
"The Adversities of the Nurse Anesthetist"
Gladys Hoffman Calhoun, Englewood Hospital, Chicago
BUSINESS SESSION—Indiana Association of Nurse Anesthetists

Thursday, May 6

GENERAL SESSION

2:00 P. M. Private Dining Room No. 14
Esther E. Edwards Presiding
Wausau Memorial Hospital, Wausau, Wisconsin
Round Table
L. H. Wright; MD., Lt. Commander, M.C. USNR, U. S. Naval Hospital, Chicago
Hugh O. Brown, M.D., Director of Anesthesia, Cook County Hospital, Chicago
Lillian Baird, University Hospital, Ann Arbor, Michigan
President, Michigan Association of Nurse Anesthetists

3:45 P.M. BUSINESS MEETING — TRI-STATE NURSE ANESTHETISTS ASSEMBLY

4:00 P.M. BUSINESS SESSIONS:
Illinois Association of Nurse Anesthetists
Michigan Association of Nurse Anesthetists
Wisconsin Association of Nurse Anesthetists

Friday, May 7

2:00 P. M. GENERAL SESSION
Private Dining Room No. 14
Agnes Lange, Fort Wayne, Indiana, Presiding
Secretary, Indiana Association of Nurse Anesthetists
"The Maintenance of Body Fluids in Surgical Patients" (with slides)
John A. Schindler, M.D., F.A.C.P., Monroe Clinic, Monroe, Wisconsin

"Cyclopropane in Surgery of Tuberculosis"
Thomas J. Snodgrass, M.D., and Leone Myers,
Pember-Nuzum Clinic, Janesville, Wisconsin

"The Ethics of Anesthesia and the Nurse Anesthetist"
Ralph T. Knight, M.D., Director, Division of Anesthesia,
University of Minnesota, Minneapolis

"Continuous Intravenous Drip Method Pentothal Sodium"
Sister Borromea, O.S.F., Director, School of Anesthesia,
St. Francis Hospital, Peoria, Illinois

CALIFORNIA

November meeting held on 18th at Children's Hospital of the East Bay, attendance twenty-three. In the absence of the President, Mrs. Jean Pray, due to illness, Mrs. Myra Belle Quarles presided and gave a report of the national convention in St. Louis.

In January, the California Association held a refresher course consisting of two series of five lectures each. The topics covered were as follows:

"Preoperative and Postoperative Medication"
Evelyn Case, M.D.

"Intravenous Anesthesia"
Bruce Anderson, M.D.

"Recent Advances in the Surgery of Hypertension"
Whitefield Crane, M.D.

"Intratracheal Anesthesia"
Lt. Comm. A. J. Wineland, M.D.

"Spinal Anesthesia"
Edward Bolze, M.D.

"Treatment of Shock"
Franklin I. Harris, M.D.

At annual meeting held March 17, 1943, at Peralta Hospital, Oakland, following officers were elected:

President		Mrs. Jean H. Pray 426 — 29th Street, Oakland
First Vice-President		Mrs. Gertrude N. Pringle 65 Buena Vista Avenue, San Francisco
Second Vice-President		Mrs. Mell J. Hanson 2 Parker Avenue, San Francisco
Secretary		Mrs. Louise A. Smith 3508 Webster Street, Oakland
Treasurer		Marie L. Hebert 1547 Bancroft Way, Berkeley
Trustees:	3rd year	Martha Bichel
	2nd year	Mabel P. Cauthorn
	1st year	Nell J. McDonald

COLORADO

Officers elected at meeting held December 19, 1942, Presbyterian Hospital, Denver:

President	Ann McDonald Stevens 1663 Gilpin, Denver
Vice-President	Henrietta M. Moon 950 Marion St., Denver
Secretary-Treasurer	Helen Tubbs 1585 Fillmore St., Denver

LOUISIANA

Louisiana Association of Nurse Anesthetists held annual meeting March 9, 1943, at the Patio Royal, New Orleans, following a dinner. Eighteen members were present. Joseph A. Danna, M.D., spoke on "Ether Anesthesia."

Officers elected:

President	Mrs. Lena Pellessier Illg 327 South Alexander Street, New Orleans
First Vice-President	Anne Elizabeth Nock Charity Hospital, New Orleans
Second Vice-President	Ellen M. McMahon 2220 Constance Street, New Orleans
Secretary	Rosalie G. Sullivan 415 Codifer Avenue, New Orleans
Treasurer	Mattie T. Word 1410 St. Andrew Street, New Orleans
Historian	Mrs. Katie R. Graves P. O. Box 1941, Alexandria
Trustees:	Margaret A. Price Mary E. Koenig Dorothy S. Duncan Elizabeth Ranna

MICHIGAN

Michigan anesthetists met November 14, 1942. Film on anoxia was shown, and Dr. Myra Babcock of Grace Hospital, Detroit, spoke on the nurse anesthetist and the medical anesthetist.

February meeting held on 20th at Statler Hotel, Detroit, fifty-five present. Lillian G. Baird, University of Michigan Hospital, Ann Arbor, presided and speakers were introduced by Mary Martin, Chairman of Program Committee, topics as follows:

"Apnea under Anesthesia: a Review of Four Cases"
Esther Meil, Henry Ford Hospital, Detroit

"Ethyl Chloride: Its Administration and Technique"
Evelyn Buferd, St. Mary's Hospital, Detroit

"Obstetrical Analgesia and Anesthesia"
Ione Wessinger, Henry Ford Hospital, Detroit

"History of the Michigan Association of Nurse Anesthetists"
Ora Mae Hartley, Beyer Memorial Hospital, Ypsilanti

"Continuous Spinal Anesthesia"
Mabel Courtney, Grace Hospital, Detroit

Following discussions on each paper, Mrs. Esther Myers Stephenson,

Mount Carmel Mercy Hospital, Detroit, spoke on her visits to numerous civilian and military hospitals on the west coast and in Mexico.

MINNESOTA

Meeting held at Abbott Hospital, Minneapolis, on November 30; attenddance twenty-three. Hostesses were Mildred Matthews, Esther Van Dam and Julia Filla. Marie Petrowske gave report of national meeting in St. Louis.

January 26th meeting, Nurses' Club Rooms, Lowry Hotel, St. Paul; attendance nineteen. Mable Baer and Agnes Bleedorn acted as hostesses. Dr. Briggs gave a talk on his trip to Cuba and Porto Rico and showed colored movies.

On February 24th the anesthetists met at St. Mary's Hospital, Minneapolis, with attendance of twenty-three. Hostesses: Sister Leonissa, Sister St. Elizabeth Heyn, Elizabeth Gaertner, Mary Mechler and Ellen Lonergan.

A book review of "Mrs. Appleyard's Year," by Mrs. Roy P. Jones, was given April 15 at St. Mary's Nurses' Home, Minneapolis, sponsored by the Minnesota anesthetists, and $45 was realized to add to the treasury.

The continuation course in anesthesiology held February 8, 9 and 10 at the University of Minnesota was a decided success. Eighty-three anesthetists registered from Minnesota, North and South Dakota, Wisconsin, Illinois, Iowa, Nebraska and Montana. The faculty consisted of the following:

Ralph T. Knight, Associate Professor of Surgery; Director Division of Anesthesia, University of Minnesota
John S. Lundy, Professor of Anesthesia, Mayo Foundation; Director of Anesthesia, Mayo Clinic
Stuart C. Cullen, Assistant Professor of Surgery; Director of Anesthesia, Mayo Clinic
Scott M. Smith, Assistant in Anesthesiology, University of Minnesota
N. N. Sonnesyn, Assistant in Anesthesiology, University of Minnesota
Palma Anderson, Deaconess Hospital, Minneapolis
Pearl Lemke, University of Minnesota Hospital, Minneapolis
J. M. Nolte, Director, Center for Continuation Study
William A. O'Brien, Director, Postgraduate Medical Education

Certificates of attendance were given to those present at the lectures.

PROGRAM — ANNUAL MEETING
Nicollet Hotel, Minneapolis
May 23-24, 1943

Sunday, May 23

8:00 A. M. Registration—Nicollet Hotel

GENERAL SESSION

9:30 Greeting
Walter P. Gardner, M.D., President
Minnesota Hospital Association

9:45 "The Management of Anesthetic Complications"
Lt. Com. L. H. Wright, M.C. USNR, U. S. Naval Hospital, Chicago

10:30	"The Surgeon and the Anesthetist" A. A. Zierold, M.D.
11:00	General discussion
12:00 P. M.	Luncheon—Minnesota Hospital Association and Allied Groups
2:00	BUSINESS SESSION (only members admitted) Palma A. Anderson, President, Presiding Minneapolis Hospital, Minneapolis
	GENERAL SESSION
2:45	"The Ethics of the Nurse Anesthetist" Ralph Knight, Director of Anesthesia, University of Minnesota
3:30	"Spinal and Intravenous Anesthetics in Relation to Urologic Surgery" C. D. Creevey, M.D.
4:30	Tea—Nicollet Hotel (room to be announced) Given by Minnesota Association of Nurse Anesthetists
	Monday, May 24
2:00 P. M.	Group Meeting of All Allied Associations "In the Service at Home" Palma A. Anderson, President, Minnesota Association of Nurse Anesthetists

NEBRASKA

Annual meeting of Nebraska Association of Nurse Anesthetists held January 12, 1943, at St. Joseph's Hospital, Omaha. The President, Mrs. Wilhelmina Gulotta, in her report outlined the difficult situation facing civilian hospitals—reduced anesthesia staffs carrying heavier loads and some hospitals forced to limit types of anesthsia given. New graduate nurses were urged to enter the field and take advantage of the liberal opportunities open to them. Mrs. Gulotta also gave a report of the national meeting held in St. Louis.

W. J. McMartin, M.D., urologist, Creighton University, Omaha, spoke on "Pentothal Sodium," in connection with the use of the B.L.B. mask, stressing the value of this anesthetic agent for cardiac patients requiring surgery.

Service stars were placed on the membership roll opposite the names of the following members of the Association who are serving with the armed forces:

Ruby Christensen, from Bryan Memorial Hospital, Lincoln
Agnes Dickenson, from Lutheran Hospital, Omaha
Gladys Lenze, from Lincoln General Hospital, Lincoln
Helen C. Seni, from St. Francis Hospital, Grand Island

By a resolution transmitted to them, the Association expressed pride in their enlistment; it commended the spirit that led them to devote their training, skill and courage to aid the men and women in military service; it expressed the desire to keep in close contact with them; and looked forward to welcoming them home again.

Officers elected:

President	Mrs. Wilhelmina S. Gulotta Lincoln General Hospital, Lincoln
Vice-President	Edith Ackerman St. Joseph's Hospital, Omaha

Secretary-Treasurer	Pauline Young Bryan Memorial Hospital, Lincoln
Historian	Mrs. Wilhelmina S. Gulotta
Trustees:	Sister Ursula Dixon Josephine E. Kramer Agnes G. Hain Laura V. Nehring

NEW YORK

TENTATIVE PROGRAM

TENTH ANNUAL MEETING NEW YORK STATE ASSOCIATION OF NURSE ANESTHETISTS

and

FOURTH ANNUAL MEETING NEW JERSEY ASSOCIATION OF NURSE ANESTHETISTS

May 26-27, 1943

Hotel Pennsylvania, New York City

Wednesday, May 26

Registration

Clinic—Long Island College Hospital, Brooklyn

12:00 P. M. Joint luncheon—New York and New Jersey anesthetists
Hotel Pennsylvania

GENERAL SESSION

Ruth O'Toole, Presiding
Jewish Memorial Hospital, New York City

2:00 P. M. Addresses of Welcome
Frances Hess, President, New York State Association of Nurse Anesthetists; Long Island College Hospital, Brooklyn
Florence Hale, President, New Jersey Association of Nurse Anesthetists; St. Peter's Hospital, New Brunswick, N. J.

2:30 "Anesthesia in Sympathectomies: Case Report"
Regina Lynch, Morrisania City Hospital, Bronx, N. Y.

3:00 "Blood Plasma"
Harry Wallerstein, M.D., New York, N. Y.

3:30 "Anesthesiology and the Autonomic Nervous System"
Paul Ansbro, M.D., Brooklyn, N. Y.

4:00 "Metrazol"
Mr. Luscher, Bilhuber Knoll Corporation, Orange, N. J.

GENERAL SESSION

Florence Hale, New Brunswick, N. J., Presiding

7:00 "Educational Law and the Nurse Anesthetists"
Vincent P. Mazzola, M.D., Brooklyn, N. Y.

8:00 "Anesthesia in Army Hospitals"
Captain Bechter, U. S. Army, Fort Dix, N. J.

9:00 Topic to be announced later
E. A. Rovenstine, M.D., Director of Anesthesia, Bellevue City Hospital, New York, N. Y.

Thursday, May 27

GENERAL SESSION

Helen Silverman, Brooklyn, Presiding

10:00 A. M. "Anesthesia in Thoracic Surgery from Surgeon's Viewpoint"
Ralph Harloe, Director Thoracic Surgery, King's County Hospital, Brooklyn
"From the Anesthetist's Viewpoint"
Bridget R. Flanagan, Long Island College Hospital, Brooklyn

11:00 BUSINESS MEETING
Election of Officers

GENERAL SESSION

2:00 P. M. "Rôle of the Nurse Anesthetist in Continuous Caudal Anesthesia"
Dr. Hengan and Dr. Edwards

3:00 "Endotracheal Anesthesia in Brain Surgery"
Dr. Dear, Beth Israel Hospital, Newark, N. J.

4:00 "Selection of Anesthetic Agent; Premedication; Throat Pack"
E. Brown, M.D., Trenton, N. J.

7:00 BANQUET—With New York and New Jersey Hospital Associations

MASSACHUSETTS

Meeting held at St. Vincent's Hospital, Worcester, December 1, 1942, seventeen present. Betty Lank, Chief Anesthetist, Children's Hospital, Boston, gave interesting report of national convention held in St. Louis in October. The Sisters served tea following the session.

OREGON

A Christmas party was held for the anesthetists at the home of Margret Giddings, and a Christmas box was sent to Kathryn Fisher, with the 46th Unit. Since that date Patricia Clendenning has joined the Army Air Corps.

January meeting was cancelled because of difficult traveling conditions. Next meeting was held at the St. Vincent's Hospital Nurses' Home, Portland, on February 22.

PENNSYLVANIA

Twelfth annual convention of Pennsylvania Association of Nurse Anesthetists held April 15 and 16, 1943, at Bellevue-Stratford Hotel, Philadelphia, in conjunction with War Conference of Hospital Association of Pennsylvania.

It was voted to donate $25.00 to the American Red Cross and to purchase War Bonds amounting to $500.00.

The following awards were presented to winners in the students' contest:

First prize—$10.00, donated by Pennsylvania Association of Nurse Anesthetists, to Sister Mary William, C.D.P., St. Francis Hospital School of Anesthesia, Pittsburgh, subject: "Shock in Relation to Anesthesia."

Second prize—$5.00, donated by Mrs. Edith David Reichardt, President of the Pennsylvania Association of Nurse Anesthetists, to Violet M. Brenner, Jewish Hospital, Philadelphia, subject: "The Value of Preanesthetic Medication."

Unfortunately, several papers arrived too late for judging. Much inter-

est has been shown in this feature and the Board of Trustees voted to continue the contest in 1944.

On Thursday afternoon, April 15, address of welcome was given by Edith Davis Reichardt, Allentown Hospital, Allentown, and greetings by Rosalie C. McDonald, President, American Association of Nurse Anesthetists, Emory University Hospital, Emory University, Georgia.

Following papers were read:

"Spinal and Caudal Anesthesia in Obstetrics"
Norris W. Vaux, M.D., Professor, Department of Obstetrics, Lying-In Hospital, Philadelphia, Jefferson Medical College, Philadelphia

"The Effect of Anesthesia on the Control of Respiration"
Robert D. Dropps, M.D., Director, Department of Anesthesia, University of Pennsylvania, Philadelphia

"Anesthesia in the United States Navy"
Lieutenant-Commander D. E. Hale, M.C., V (S), U.S.N.R., United States Naval Hospital, Philadelphia

"Fool's Paradise"
George J. Thomas, M.D., Professor of Anesthesia, School of Medicine, University of Pittsburgh, Pittsburgh

"Conduct of Emergency Medical Service as Applied to Anesthesia"
Arthur P. Keegan, M.D., Chief, Emergency Medical Service, Department of Civilian Defense, Philadelphia

Panel discussion:

Coordinator—Rose G. Donovan
Mount Sinai Hospital, Philadelphia

Hospital Superintendent:
May Middleton, R.N., F.A.C.H.A.
Methodist Episcopal Hospital, Philadelphia

Superintendent of Nurses:
Sister Rita, R.N.
St. Joseph's Hospital, Philadelphia

Operating Room Supervisor:
Catherine Beardsley, R.N.
Jewish Hospital, Philadelphia

Chief Surgeon:
Clinton Herrman, M.D.
St. Joseph's Hospital, Philadelphia

Medical Anesthetist:
Edward W. Beach, M.D.
Professor of Anesthesia, Graduate School, University of Pennsylvania, Philadelphia

Nurse Anesthetist:
Hilda R. Salomon, Jewish Hospital, Philadelphia

On Friday morning, April 16, a clinic was held at the Doctor's Hospital, conducted by Arthur P. Keegan, M.D., and George J. Thomas, M.D., followed by luncheon at the hospital.

Report of Secretary

Members in good standing April 1, 1942		247
Members in good standing April 1, 1943		274
Delinquent members:		
April 1, 1942	52	
April 1, 1943	47	
Deaths		3
Addresses unknown		5
Members transferred to Pennsylvania Ass'n		13
Members transferred from Pennsylvania Ass'n		9
New members		26
Applications accepted but dues not yet paid		5
Applications pending in national committees		27
Applications deferred		4
Total membership April 1, 1942		299
Total membership April 1, 1943		321
Correspondence sent out (letters, bills, notices, membership cards)		1610 pieces
Correspondence received (as above)		554 pieces

Report of Treasurer

Balance April 1, 1942		$1,741.06
Receipts		
Dues	$1,817.00	
Application fees	108.00	
Donation for prize in contest	10.00	
Dues from American Ass'n for members transferred into Penna. Ass'n	27.25	
Dues overpaid	4.00	
Interest on savings account, Phila. Saving Fund Society	19.02	1,985.27
		$3,726.33
Disbursements		
Dues to American Ass'n	$1,218.75	
Application fees to American Ass'n	108.00	
Contest prizes awarded	15.00	
Office expense	66.42	
Fidelity Bond for Sec'y-Treas	5.00	
Convention expense	182.52	
Dues refunded	3.00	
Refund to District Ass'n	20.25	
Trust Fund payment for 272 members	27.20	1,646.14
Balance March 31, 1943		$2,080.19

Represented by:

Balance on deposit, Central Penn National Bank	$ 839.17	
Philadelphia Savings Fund Society	1,019.02	
$300 U. S. Government Defense Bonds Series "F," due 5/1/54—cost	222.00	$2,080.19

Officers elected:

President	Helen C. Shaughnessy
1943-45	Doctors' Hospital, Philadelphia
Second Vice-President	Marion Robinson Briggs
1943-45	309 Mattison Avenue, Ambler
Historian	Ida McK Emerick
	Rochester General Hospital, Rochester
Trustees:	Josephine C. Casey
1943-45	Edith Davis Reichardt
	Helen Rogus

TEXAS

Annual meeting held February 18, 1943, at the Texas Hotel, Fort Worth, with good attendance. Greetings were extended by Minnie V. Haas, President, and by Mrs. Margaret Hales Rose, President of the Texas Hospital Association. Round table was conducted by Jessie L. Compton, Methodist Hospital, Dallas, and Mrs. Jack K. Childress gave a report of the national convention held in 1942 in St. Louis. The Red Cross speaker was Mrs. Beavers, Fort Worth. A luncheon was held with the Texas Hospital Association.

The following papers were read:

"Anoxemia"
F. L. Snyder, M.D., Fort Worth

"The Nurse Anesthetist in the Army"
1st Lt. Edna M. Aycock, A.N.C., Chief Nurse, Station Hospital, Camp Bowie, Texas

"Intratracheal Anesthesia"
C. P. Schenck, M.D., O.A.L.R., Fort Worth

The Texas Association are now the proud owners of four $100 War Bonds.

Officers elected:

President		Gertrude Motes Baker
		Shannon Memorial Hospital, San Angelo
Vice-President		Grace Richardson Gatton
		424 S. Ballinger, Forth Worth
Secretary-Treasurer		Mrs. Jack K. Childress
		716 W. Avenue "G," Temple
Trustees:	1 year	Winnifred Hackworth
	2 years	Laura Hoffman
	3 years	Jessie Lee Compton
	3 years	Opal Colyer

UTAH

Regular meetings were held in January, at one of which F. F. Hatch, M.D., spoke on "Last Minute News on Anesthesia." At the first March meeting H. H. Reichman, M.D., gave an interesting report on "Spinal Anesthesia in Rectal Surgery."

The Utah anesthetists are buying more War Bonds.

WISCONSIN

Wisconsin anesthetists met at Mount Sinai Hospital, Milwaukee, February 8; sixteen present. Following business session an educational talkie film entitled "Anoxia" was exhibited by representatives of the Linde Air Products Company, followed by another film on the care of oxygen equipment, including care and proper lubrication of nasal catheter.

NOTICE

The certification program approved by the membership is now in the hands of the Council on Professional Practice of the American Hospital Association for action by this council.

Until the Council acts, after which informative notices will appear in the Bulletin, it is necessary to the smooth functioning of the organization that state officers and individual members proceed with present organization routines. We ask your cooperation during any delays that are occasioned by the war.

In Memoriam

Miss Sarah A. Maguire, of St. Agnes Hospital, Philadelphia, died in Philadelphia on September 1, 1942, after a short illness. Miss Maguire had been a member of the Pennsylvania and American Associations of Nurse Anesthetists since 1936.

Mrs. Mary A. McBride Wigmore, Prospect Park, Pennsylvania, died January 28, 1943. Mrs. Wigmore had been a member of the Pennsylvania and American Associations since 1935.

NOTICE TO STATE SECRETARIES

The new transfer system outlined in the August 1942 issue of the Bulletin, page 175, had a great deal of merit, but due to heavy schedules and lack of personnel, many letters from State Association Secretaries have arrived at Headquarters, saying that there were not enough minutes in the day to fill out transfer slips, et cetera. Therefore a questionnaire was sent to all the States, asking whether or not they preferred to go back to the old system of merely having Headquarters notify the State Secretaries of any changes of address received direct from the members, Headquarters also notifying the Chairman of the Publishing Committee of such changes. Ninety-six per cent of the State Associations voted for the resumption of the old and simpler system, which will therefore be followed in the future.

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Urgently needed, two anesthetists; salary $125 and full maintenance, 65 bed hospital. Transportation furnished. If interested make application direct to Kapiolani Maternity Hospital, Honolulu.

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University Hospitals of Cleveland, Ohio

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